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Kim Blum _____
Name (Print) Signature

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Michaluk	Examiner:	Lois L. Zheng
Application Number:	10/042,549	Group Art Unit:	1793
Filed:	January 9, 2002	Confirmation No.:	5470
Docket No.:	CPM00029CIP (3600-328-01)		

For: TANTALUM AND NIOBIUM BILLETS AND METHODS OF PRODUCING THE SAME

DECLARATION UNDER 37 C.F.R. §1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

August 21, 2008

Sir:

I, Craig Carpenter, do declare and state as follows:

(1) I am an employee of Cabot Corporation and am currently Vendor Manufacturing Manager, and have a B.S. in Environmental Resource Management and Engineering from the Pennsylvania State University and a M.Eng. in Engineering Science from the Pennsylvania State University. I have worked in the tantalum mill at Cabot Corporation in Boyertown, PA for several years, and have gained practical experience with various metal forming steps that include forging and rolling of tantalum.

(2) I have read the final Office Action dated February 21, 2008 in U.S. Patent Application No. 10/042,549, and the documents cited in the rejections.

(3) In view of my personal experience in working with tantalum metal, including tantalum plate and billet, I have studied the processes of the Clark reference that the Examiner is citing. One process of Clark describes the extruding of an ingot to a rectangular plate. Clark then anneals the rectangular plate after which he rolls the annealed plate parallel to the ingot center line, turns the plate 90 degrees and rolls the plate perpendicular to the ingot center line. This is shown in Figs. 2 and 3 of Clark. The parallel and perpendicular rolling, with respect to ingot centerline, in Clark would not be possible if the material was a cylindrical billet as described in the present application. The Examiner's argument that the process of Clark could be converted to form an extruded cylindrical billet instead of a rectangular plate would not be possible, because Clark specifically describes the next step of rolling parallel to the ingot's centerline and then rolling perpendicular to the ingot's centerline and, this would not be possible with a cylindrical object like a billet. These additional rolling steps of Clark would essentially not be possible since the rolling of a rod or cylindrical billet would not be controllable. The rod either would not be pinched through the rollers to deform the rod or the rod would uncontrollably go through the rollers and form a type of "corkscrew" through the rollers; thus, not forming the flattened material required by Clark.

(4) Further, in the case of rolling cylindrical input perpendicular to ingot centerline, it is first and foremost not the process described by Clark for round products (processes 1 and 2). In practicality, it would be likely impossible and most impractical to make the first breakdown passes in the broadside configuration. As the top and bottom work rolls in a rolling mill turn in opposite directions to pass materials through the mill gap (opening), a round input would be spun if either roll contacted the billet prior to engagement by both rolls. This would not only cause

uncontrolled deformation and shape, but would also be highly dangerous to the machine and machine operators.

(5) The Examiner states that the size and shape of the extruded billet is based upon the final application of the final metal product. This is not necessarily true, especially with billets. An extruded billet is generally an intermediate product and has a variety of shapes and sizes because the billet is typically subdivided into various lengths for further processing. Thus, the size and shape of the extruded billet is not entirely dependent on the final metal product. Clark even uses a significantly smaller cylindrical object to form into a rectangular bar and then into a rectangular plate. The dimensions used in Clark can be made from the larger sized extruded billet of the present invention, wherein multiple plates would be made. The beginning size and shape of the billet is not strictly size-dependent on the final product.

(6) Regarding the importance of the diameter of the starting billet, as shown in the present invention, a larger diameter billet can have equal or finer average grain size and similar grain size uniformity, and this shows that a larger sized ingot diameter permits a greater amount of stored energy to be parted into the extruded billet.

(7) Based on the process depicted in Turner, none of the material is shown as a cylindrical intermediate product and, further, none of the information in Turner measures or provides information regarding the uniformity of grain size throughout the intermediate product.

(8) I would also point out the following in Turner:

Turner states that the first deformation (ingot) is perpendicular to centerline. Whereas in Clark it is parallel. Although Turner states deformation can be forging, rolling or extrusion, extrusion would not be effective nor practical perpendicular to ingot centerline. In describing the first

reduction in cross sectional area, Turner states; "The reduction in cross sectional area should be greater than a reduction ratio of 3:1 (cross-sectional area of ingot to cross sectional area of the forged billet), or equivalent to no less than about 40% strain reduction from starting thickness to final thickness." To me, this implies that the first Turner reduction is by forging. This makes sense as he is trying to get flat surfaces for rolling. Extruding flat would be done parallel to ingot centerline as described in Clark. Turner goes on to support that the first deformation is by forge when describing the first of three anneals. Namely; "The forged billet should then be annealed in an inert atmosphere....".

(8) I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and any such willful false statement may jeopardize the validity of the application or any issuing thereon.

Date: August 21, 2008 Craig M. Carpenter

Craig Carpenter